NOTES.

The following is the list of names recommended by the President and Council of the Royal Society for election into the Council for the year 1891, at the forthcoming anniversary meeting on December 1:—President: Sir William Thomson. Treasurer: Dr. John Evans. Secretaries: Prof. Michael Foster, the Lord Rayleigh. Foreign Secretary: Archibald Geikie. Other members of the Council: Prof. William Edward Ayrton, William Henry Mahoney Christie, Prof. W. Boyd Dawkins, James Whitbread Lee Glaisher, Dr. Hugo Müller, Prof. Alfred Newton, Sir William Roberts, William Chandler Roberts-Austen, Prof. Edward Albert Schäfer, Sir George Gabriel Stokes, Bart., Lieut.-General Richard Strachey, R.E., Prof. Joseph John Thomson, Prof. Thomas Edward Thorpe, Sir William Turner, Prof. Sydney Howard Vines, General James Thomas Walker, C.B.

The recent delimitation of the spheres of influence of Great Britain and Germany in Tropical Africa will probably give a considerable impulse to the systematic investigation of its flora by the travellers and botanists of either nation. An arrangement has, therefore, been made between Kew and the Royal Botanic Museum at Berlin, for the regular exchange of African collections. In accordance with it, the extensive herbarium of Marocco plants formed by the late John Ball, F.R.S., after the selection for Kew of all unique specimens, is about to be transmitted to Berlin.

The Geological Photographs Committee, appointed by the British Association to arrange for the collection, preservation, and systematic registration of photographs of geological interest in the United Kingdom, have issued a circular inviting the co-operation of geologists in their work. At the Leeds meeting of the British Association, the Committee exhibited, as the result of their first year's operations, a collection numbering upwards of 270 photographs, many of which illustrated geological sections, and other features of considerable scientific interest. The Committee, however, point out that, so far as the work has yet proceeded, only a small proportion of the counties in the British Islands have been represented; and they urge upon geologists the desirability of further assisting the scheme, with the object of forming a national collection of photographs illustrating the geology of our own country, which will ultimately be deposited in some convenient centre. The Committee wish to receive copies of suitable photographs, which will be duly numbered and registered, or to be favoured with the following information, viz.:—(1) Lists and details of photographs of geological character already in existence. (2) Names of local societies, or persons, who may be willing to further the objects of the Committee in their own district. (3) Particulars of localities, sections, boulders, or other features which it may be desirable to have photographed. A circular of instructions has been drawn up, copies of which will be supplied to any persons who may desire to have them. The Secretary of the Committee is Mr. Osmund W. Jeffs, 12 Queen's Road, Rock Ferry, Cheshire.

The American Association for the Advancement of Science will hold its session for 1891 at Washington. Among the subjects on which papers and discussion are especially invited are: the absorption of gases and of fluids by, and the movements of water in plants, the aëration of aquatic plants, and transpiration.

The eighth Congress of the American Ornithologists' Union will meet at Washington on November 18. The meetings will be held at the U.S. National Museum.

The Society of Arts has issued its programme of "sessional arrangements." The following are the Cantor Lectures, which will be delivered on Monday evenings at eight o'clock: Prof. Vivian B. Lewes, "Gaseous Illuminants" (five lectures), November 24, December 1, 8, 15, 22; A. J. Hipkins, "The Construction and Capabilities of Musical Instruments" (three lectures), January 26, February 2, 9; Gisbert Kapp, "The Electric Transmission of Power" (three lectures), February 16, 23, March 2; Prof. R. Meldola, F.R.S., "Photographic Chemistry" (three lectures), March 9, 16, 23; Hugh Stannus, "The Decorative Treatment of Natural Foliage" (four lectures), April 13, 20, 27, May 4.

One lamentable result of the very rainy summer and autumn has been the partial submergence of the Botanic Garden at Prague, by which incalculable damage has been done to the very fine collection of plants under the care of Prof. Willkomm, the work of many years' careful and untiring labour. The fires in the hot-houses were extinguished, and one glass-house entirely destroyed. The unique collection of succulent plants, including 200 species of *Sempervivum* and 320 of *Cactus*, suffered irreparable injury. The splendid collection of models and preparations only recently made has been rendered almost valueless; in the lecture-room, where it was placed, the water stood at a height of about 5 feet 6 inches.

A quaint custom, dating back to Anglo-Saxon times, known as payment of "wrath silver," was recently observed at Knightlow Hill, a tumulus between Rugby and Coventry. It consists of tribute payable by certain parishes in Warwickshire to the Duke of Buccleuch. The silver has to be deposited at daybreak in a hollow stone by representatives of the parishes, the penalty for default being forfeiture of a white bull with a red nose and ears. The representatives afterwards dined together at the Duke's expense.

The Deutsche Seewarte and the Danish Meteorological Institute have just issued two more quarterly volumes of synchronous daily weather charts of the North Atlantic, bringing the series of this valuable publication down to November 1886. These volumes show very clearly the difference of conditions existing over that ocean between summer and autumn; the difference of atmospheric pressure is much less in summer, and consequently the winds are lighter. A cursory glance at the low-pressure areas shows their important effect upon the weather of their vicinity, and the history of the severe gale which visited this country on October 15–16, 1886 (a discussion of which appeared in the Quarterly Journal of the Royal Meteorological Society for January 1887), may be clearly traced on the charts, as well as several other disturbances which reached our coasts from the Atlantic. The importance of such work can hardly be over-estimated, but its value would be further enhanced if the publication could be made nearer to current date.

The year ending last April was remarkable in point of weather in St. Petersburg. Thus (as Dr. Woeikof points out) only once in 130 years was the mean temperature of the seven months October to April warmer than in this year—viz. in 1821–22, when the excess was 4°·2 C. (this year 3°·6). The normal order of the months was not disturbed, as so often occurs in warm winters. It looked as if St. Petersburg had moved into a warmer and more continental climate. In the number of warmest days of the 130 years series, October and April (1889–90) are unequalled. Reckoning as summer days those with 16° (the mean of summer) or over, it appears that between the last and the first summer day the number of days in 1889–90 is 24 less than the shortest period hitherto observed, two months shorter than the mean, and 112 days shorter than in 1821–22. And it is curious that the period in question is longest in the year in which October to April was warmest (1821–22), but shortest in the next warmest (1889–90).

The following details of the earthquake in Persia in June, last have been received from Dr. Jellisew, a Russian doctor who, on the evening of the 28th inst., was at a considerable distance from Teheran, on his way from Meshed to the capital. The centre of the earthquake seemed to be Tasch, a village on the side of a mountain, and close to a deep precipice. The noise of the shocks was so loud that Dr. Jellisew was awakened from his sleep, and in a few minutes several houses fell together. Others had great cracks in their walls. Many people rushed into the fields; most of those who remained in the houses were killed. Large blocks of rock are said to have burst asunder.

A STALACTITE cave has been discovered recently in one of the State forests near Bissingen, in Würtemberg. The entrance is said to be 15 metres high, and 3 or 3½ wide.

PROF. J. MARK BALDWIN contributes to *Science*, October 23, a note of some interesting experiments relating to the "origin of right- or left-handedness." The subject of them was his own child, and they extended over the greater part of the first year. The following are the points recorded:—(1) He found no trace of preference for either hand as long as there were no violent muscular exertions made (based on 2187 systematic experiments in cases of free movement of hands near the body, *i.e.* right hand 585 cases, left hand 568 cases, a difference of 17 cases; both hands 1034 cases; the difference of 17 cases being too slight to have meaning). (2) Under the same conditions the tendency to use both hands together was about double the tendency to use either (seen from the number of cases of the use of both hands in the statistics given above), the period covered being from the child's sixth to her tenth month inclusive. (3) A distinct preference for the right hand in violent efforts in reaching became noticeable in the seventh and eighth months. Experiments during the eighth month on this cue gave, in 80 cases, right hand 74 cases, left hand 5 cases, both hands 1 case. In many cases the left hand followed slowly upon the lead of the right. Under the stimulus of bright colours, from 86 cases, 84 were right-hand cases, and 2 left-hand. Right-handedness had accordingly developed under pressure of muscular effort. (4) Up to this time the child had not learned to stand or to creep; hence the development of one hand more than the other is not due to differences in weight between the two longitudinal halves of the body. As she had not learned to speak, or to utter articulate sounds with much distinctness, we may say also that right- or left-handedness may develop while the motor speech-centre is not yet functioning.

AT a recent meeting of the Paris Société de Biologie, M. J. Kunckel d'Herculais announced that he had been able to trace the entire development of the parasitic *Mylabris schrebersi*, which, like the *Epicauta* studied by C. V. Riley, live parasitically on different *Acridia*, on *Stauronotus maroceanus* particularly.

WE learn, from the *Oesterreichische botanische Zeitschrift*, of interesting botanical results obtained from Herr J. Bornmüller's expedition to Asia Minor. From Amasia he had paid a five-weeks' visit to the mountain district of Siwas, Kaisarieth, and Jusgat, where he found, at altitudes varying from 1800 to 2500 metres, a flora differing widely from that of Amasia; many Alpine species with showy flowers, belonging to the genera *Primula*, *Gymnadenia*, *Papaver*, *Ranunculus*, *Globularia*, *Geranium*, *Centaurea*, *Bupleurum*, *Fritillaria*, &c., being found in great abundance. The ascent of the steep cone of Yildiz-dagh, 2520 metres, occupied 12 hours. Four days were required for the ascent of Mount Argæus, the higher elevations of which were covered with immense masses of snow. The mountain is 13,000 feet high, and for the last 1500 metres nothing but snow and glacier was traversed; the actual summit of 150 feet was found inaccessible. At a height of 2900 metres all traces of trees had disappeared, and the only shrubs found were starved specimens of *Juniperus nana* and tragacanth in the fissures of the rocks; but the pastures were covered with an abundant and brilliant vegetation. In the snow-covered regions the night-temperature was + 2°–3° R. Several new species were collected, among them a beautiful orange-yellow *Fritillaria*. On his return to Amasia he found the herbaceous vegetation almost entirely scorched up by the heat of the sun. Herr Bornmüller was then starting for the sources of the Gök-Irmak in Paphlagonia, whence he hoped to bring rich collections, the only botanist who has hitherto visited that district being Wiedemann, in 1840; and his collections are to be found only in the herbarium at St. Petersburg.

WITH reference to our Notes on scientific guide-books to Switzerland, a correspondent sends us the following list:—(1) "Scientific Guide to Switzerland," by J. R. Morell, H.M. Inspector of Schools (Smith, Elder, and Co., London, 1867), 396 pages and index (same size as International Scientific Series). It treats of orography, geology, hydrography, meteorology, glaciers, fauna and flora of Switzerland. (2) "Le Monde des Alpes," a picturesque description of the Alps, and particularly of the animals which inhabit them, translated by O. Bauritt from the German of Dr. F. von Tschudi, "Das Thierleben der Alpenwelt," published by H. Georg, at Geneva and Bâle, 864 pages (same size as Prestwich's "Geology"), and 24 full page woodcuts, tinted, published in 1870, from the second German edition. (3) "Les Alpes," par H. A. Berlepsch (same size as Prestwich's "Geology"), with 16 tinted full plate cuts, published by H. Georg, at Geneva, 1870. The original is in German, with 441 pages. It contains an excellent description of the natural phenomena of Switzerland and the life of the inhabitants of the mountains. 10 francs unbound, 14 francs bound. It has been translated into English.

MM. G. ROUY AND J. FOUCAUD have undertaken the preparation of a "Flora of France," intended to take the place of that of Grenier and Godron. In order to render the work as accurate and as complete as possible, they earnestly request the co-operation of those who are acquainted with the botany of any portion of the extensive region which their task will cover.

MESSRS. OLIVER AND BOYD publish the introductory lecture to the Agricultural Class at the University of Edinburgh, delivered by Prof. R. Wallace on October 22. The subject is, "American Cattle, and the American Export Trade in Beef and Live Cattle to Great Britain."

A PAMPHLET on "The Philosophy of Cycling," by Mr. W. K. Fulleylove, has been issued by Messrs. Curtis and Beamish, Coventry. It is the first of a "popular series of pamphlets on every-day science."

THE latest work issued in the series entitled "Smithsonian Miscellaneous Collections," is a valuable "Index to the Literature of Thermodynamics," by Dr. Alfred Tuckerman. The work is similar to Dr. Tuckerman's "Index to the Literature of the Spectroscope," published in the same series. All the titles are given in full in the author-index, but in the subject-index, to save useless repetition, only the authors and the places where their works are to be found are given—except in the case of books. The work has been brought down to the middle of the year 1889.

A USEFUL summary of progress in mineralogy and petrography in 1889 is presented in the form of a pamphlet compiled by Mr. W. S. Bayley (Waterville, Me.). It consists of a series of monthly notes which appeared originally in the *American Naturalist*.

THE Frankfort publisher H. Bechhold is issuing what promises to be a valuable "Handlexikon" of the natural sciences and of medicine. The editors are A. Velde, W. Schauf, V. Loewenthal, and J. Bechhold. Especial attention is paid to the practical applications of the sciences.

THE seventh volume of the Proceedings and Transactions of the Royal Society of Canada for the year 1889 includes, among other papers, the following: the cartography of the Gulf of St. Lawrence, from Cartier to Champlain, by W. F. Ganong; trade and commerce in the Stone Age, by Sir Daniel Wilson; expeditions to the Pacific, by S. Fleming; notes on mathematical physics, by J. Loudon; on the variation of the density with the concentration of weak aqueous solutions of certain salts, by J. G. McGregor; on new species of fossil sponges from the Siluro-Cambrian at Little Metis on the lower St. Lawrence, by Sir J. W. Dawson.

MR. C. C. VEVERS, Leeds, has published an illustrated catalogue of photographic apparatus, materials and catalogues, and optical lanterns and accessories.

MESSRS. R. FRIEDLÄNDER AND SON, Berlin, have just issued two catalogues of books which they have for sale, one relating to comparative anatomy, the other to *Arachnida*, *Myriopoda*, *Crustacea*, and *Rotatoria*.

BY authority of the Consul-General of Uruguay, London, a catalogue has been issued of the minerals from Uruguay shown at the recent International Exhibition of Mining and Metallurgy at the Crystal Palace. Associated with the catalogue are various allied documents, one of which is the mining code of the Republic.

COLONEL HOLABIRD, of Los Angeles, has lately returned to San Francisco from an exploring expedition in the cañons of Colorado. He penetrated districts never before explored, and found in an almost inaccessible cañon 100 miles north of Williams, and near the Grand Cañon of the Colorado, the Yava Supai tribe of Indians, who had never seen any white man, except Lee the Mormon, who was shot for the Mountain Meadows massacre. Colonel Holabird, in relating his experiences to a correspondent of the *New York Tribune*, said:—"These Indians are of the Apache family, but of ancient origin. The men are magnificent specimens. The valley in which the tribe has lived for many years in seclusion has only two ways of approach. It contains 2000 acres, and is inclosed by almost perpendicular walls 4000 feet high. We travelled over 15 miles along a cañon—a lifeless country. Suddenly we came to two boiling springs under cotton-wood trees. From these springs a river starts, which winds its way through a luxuriant valley. The water in the river is clear as crystal, and so strongly impregnated with lime that it petrifies everything it touches. There are three immense cataracts in the cañon. These look as if centuries ago a huge cotton-wood tree had fallen across the stream and lodged. Mosses, ferns, and creepers formed a barrier. All these have been turned to limestone. The grass caused the deposit to increase until the barricade extended across the cañon, making a fall of 250 feet. Along the front of these high cataracts, limestone ridges have formed 20 to 50 feet one above the other. Over all these the water falls like a sheet of glass. Underneath, between the ridges, thousands of plants, with flowers in full bloom, are seen, while millions of humming-birds dart in and out. The chief of the strange tribe is an old man of sixty—'Captain Tom.' I found these Indians in a starving condition, subsisting on berries and grass-seed. I appealed to the Government for them, but the Indian Department said it could not help wandering people."

THE November number of the *American Journal of Science* contains an account of the preparation of pure metallic cadmium, by the process of distillation *in vacuo*, recently carried out by Mr. E. A. Partridge in the laboratory of the University of Pennsylvania. The successful experiments described a few months ago by Messrs. Morse and Burton, in which it was shown that metallic zinc could be obtained in a state of purity by distillation at a high temperature in a vacuum constantly renewed by means of a Sprengel pump, led Mr. Partridge to make a similar attempt in the case of cadmium, with the ulterior purpose of utilizing such a sample of the pure metal for a redetermination of its atomic weight. The process has proved perfectly successful, and yields a metal of such purity that even spectroscopic examination fails to detect any traces of admixed foreign metals. The retorts employed were of glass—naturally of the hardest kind that could be procured. They were made of tubing of 20–25 mm. diameter, and at a distance of about 11 cm. from the closed end were drawn out into a neck of 12 mm. diameter, through which the volatilized metal passed into the receiving portion of the tube. This latter portion was finally drawn off in such a manner that it could be tightly connected with a treble-fall Sprengel pump. About a hundred grams of cadmium were introduced into the retort before drawing off, and after the latter operation had been performed the apparatus was exhausted by means of the pump, which was kept working during the whole period of the distillation. The retort was then heated in the combustion furnace in which it was supported, the temperature being so regulated that most of the liquefied metal ran back into the retort, only the more volatile vapours passing through the neck into the receiver. The distillation was continued until about sixty grams of metal had passed over, the operation lasting about an hour. The volatilized cadmium condensed partly in the bottom of the receiver in the form of a bar, and partly upon the upper portion and sides in the form of brilliant perfectly-developed crystals. The product was redistilled in a similar manner in order to minimize the risk of traces of foreign metals being carried over. The precaution, however, appears to be unnecessary, for the residue left after re-distillation of the greater portion was found to contain no trace of impurity when examined spectroscopically. The atomic weight of cadmium was determined by three distinct methods, the salts employed being prepared from this redistilled metal. In the first series the loss of weight on converting the oxalate into the oxide by ignition formed the basis of calculation, in the second series the loss of weight on converting the sulphate into sulphide by ignition in a stream of sulphuretted hydrogen, and in the third series the loss brought about on similarly converting the oxalate into sulphide. The mean values obtained for the atomic weight, when $O = 16$, from ten experiments in each series were respectively 111·80, 111·79, and 111·80. The final value deduced from the whole of the experiments is thus 111·8.

THE additions to the Zoological Society's Gardens during the past week include two Squirrel Monkeys (*Chrysothrix sciurea*) from Guiana, presented by Mr. E. Leech; a Brown Bear (*Ursus arctos*) from Russia, presented by Mr. W. H. Stuart; an English Wild Cow (*Bos taurus*, var.) from Bangor, North Wales, presented by Mr. G. W. Assheton-Smith; two Masked Weaver Birds (*Hyphantornis personata* ♂ ♀) from Abyssinia, a Short-winged Weaver Bird (*Hyphantornis brachyptera*) from Africa, presented by Commander W. M. Latham, F.Z.S.; a Viverrine Cat (*Felis viverrina*) from India, a White-crested Touracou (*Corythaix albo-cristata*) from West Africa, deposited; a —— Shrike (*Lanius lahtora*) from India, purchased.

OUR ASTRONOMICAL COLUMN.

MEASURES OF LUNAR RADIATION.—The Proceedings of the American Academy of Arts and Sciences (vol. xxiv.) contains an account of some measures of lunar radiation made by Mr. C. C. Hutchins by means of a new thermograph. This instrument consists of a single thermal junction of nickel and iron placed in the focus of a small concave mirror. The author finds that the condensing mirror fulfils the functions of multiplied junctions, while the single union rapidly attains thermal equilibrium. A